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EXAMINER

ANGEBRANNDT, MARTIN J

ART UNIT PAPER NUMBER

1756

DATE MAILED: 09/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/692,075

Applicant(s)

HARRIS, KEN

Examiner

Martin J Angebrannt

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2003 and 07 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2,4-6,8-13,15-19,22-24,26 and 28-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2,4-6,8-13,15-19,22-24,26 and 28-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 19.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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1a The response provided by the applicant has been read and given careful consideration. Response to the arguments forwarded by the applicant are provided after the first rejection to which they are directed. The examiner accepts the applicant's interpretation that seamless applies to single layers, which are not joined at the edges, such as flat stampers with the resist merely spin-coated or laminated on the surface and as well as cylindrical stampers where the photoresist/polyimide is coated from a liquid to during rotation of the roller to provide a seamless coating. As discussed previously, this interpretation opens the claims to read on flat polyimide stampers or printing plates which inherently would not have seams as they are coated as a single layer and not wrapped and joined/seamed as discussed with respect to rollers in the prior art in the specification on page 3/line 10 through page 4/line 2.

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 2,15 and 30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 is still dependent upon claim 1, which has been cancelled.

In claim 30, "surfacec" should be replaced with - - surfaces- - .

In claim 15, "(b)" should be replaced with - - (c)- - to agree with claim 10.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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4. Claim 26 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 26 should indicate that the polyimide transfer medium is cast onto a surface, **the data transferred into the transfer medium upon peeling/removal from the data containing surface** and then the transfer medium is used to **emboss or stamp** the data into another surface.

The examiner is of the position that without separating the polyimide transfer materials from the data containing surface, it cannot be used in step b. **Please insert a peeling or removing step.** If the applicant can articulate how the transfer of data to other surfaces can occur without the peeling step, the examiner may reconsider this position.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 31,2,5, and 6 are rejected under 35 U.S.C. 102(b) as being fully anticipated by or obvious over IBM Technical Disclosure Bulletin Vol. 30(3) pp. 1392-1393 (08/1987).

IBM Technical Disclosure Bulletin Vol. 30(3) pp. 1392-1393 (08/1987) teaches the formation of a holographic surface relief grating including spin coating a photosensitive

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polyimide, pre-baking at 85 degrees C, exposing the polyimide with light from a HeCd laser to record the holographic image, and a postbaking/development at 225 degrees C. The polyimide allows dry or wet development, which is disclosed as an advantage.

The examiner has assumed that claim 2 should be dependent upon claim 31, like the others previously dependent upon claim 1. The examiner holds that the article, developed in liquid or by heating is the materially the same, particularly after hardening by backing as set forth in claim 6. If this is not found to be the case, based upon evidence or the like, then the examiner holds that it would have been obvious to modify the example of IBM Technical Disclosure Bulletin Vol. 30(3) pp. 1392-1393 (08/1987) by using wet development as this is described as conventional and known in the art along with the parameters for development.

The examiner also points to the use of the interfering beams in the IBM Technical Disclosure Bulletin Vol. 30(3) pp. 1392-1393 (08/1987) in the first paragraph, which states “.....interference of two mutually coherent laser beams.....”. The use of wet development of Probimide 330 series resists is disclosed in the language which states, “...a photosensitive polyimide that in normally developed with a wet developer....”. in the second paragraph p fthe text.

8. Claims 31,2,4-6,10,11,15-17,22,24 and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over IBM Technical Disclosure Bulletin Vol. 30(3) pp. 1392-1393 (08/1987), in view of Shvartsman ‘689 and Kataoka et al. JP 08-039572.

Shvartsman ‘689 describes the coating of a photohardenable film on a substrate , embossing a pattern into it , curing it while in contact, peeling and transferring the relief image in the photohardened film to another surface by stamping. (8/56-9/21) The use of roller or flat die

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shapes is disclosed. (9/22-55). See also the examples. Holograms can include images and or text stored holographically.

Kataoka et al. JP 08-039572 teaches the use of a patterned photosensitive polyimide on the interior surface of a mold. These are pre-heated at 50 degrees and post-baked at 240 degrees in the examples. [0031].

It would have been obvious to modify the process of IBM Technical Disclosure Bulletin Vol. 30(3) pp. 1392-1393 (08/1987) as discussed above, by using the surface relief hologram formed in the flat surface to replicate itself in other materials as stamping is disclosed as Shvartsman '689 and Kataoka et al. JP 08-039572 who establish that cured photosensitive layers, including polyimides are known to be useful as masters for stamping and molding.

The response above addresses the arguments of the applicant.

9. Claims 31,5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over McGrew '030, in view of IBM Technical Disclosure Bulletin Vol. 30(3) pp. 1392-1393 (08/1987).

McGrew '030 discloses that the transfer layer may be a **photoresist** applied to the roller from a tank of liquid photoresist, which would not leave a seam in the photosensitive coating allowing continuous embossing (2/58-59) and is disclosed as useful in the printing arts. (4/26-38). The use of **positive resist** is disclosed (3/57-62) After development of the pattern, the pattern may be transferred into the underlying layer by etching. See figures 4-8 concerning light exposure of the resist.

It would have been obvious to one skilled in the art to modify the process of McGrew '030 by using the polyimide resin and its processing in place of other positive resists with a

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reasonable expectation of gaining the advantage of being able to use dry (heat) development, which saves on solvents and the need for further apparatus.

The addition of McGrew and/or Fan et al. addresses the issue of seamless printing or embossing mandrels and their advantages as well as modes of coating the rollers.

The applicant argues that McGrew does not disclose exposure to pattern the photoresist. This is entirely without merit on its face. The reference in addition to points out the use of positive resists and exposure processes (1/29-30,4/47-56,6/11-15 and columns 8-9) actually has 6 figures where means for this are shown and described in the corresponding text of the patent. Further, the examiner notes that the claims 10,28,29 and those dependent upon them do not even require the interference exposure. The examiner also points to the use of the interfering beams in the IBM Technical Disclosure Bulletin Vol. 30(3) pp. 1392-1393 (08/1987) in lines 3-5 of the text, which states “.....interference of two mutually coherent laser beams.....”. Similar language is found in McGrew '030 at col. 1/lines 29-30. and in the discussion of the figures, particularly elements 615,665,700 and 800 which are the reference beams and the other beams are the object beams (605,625,710 and 810). Therefore both references teach interferometric exposure using two beams.

10. Claims 31,2,5,6,10-13,15-17,22 and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shvartsman '689, in view of McGrew '030, IBM Technical Disclosure Bulletin Vol. 30(3) pp. 1392-1393 (08/1987) and Kataoka et al. JP 08-039572.

It would have been obvious to one of ordinary skill in the art to use the polyimides and process thereof taught by Kataoka et al. JP 08-039572 to form photoresist embossing surfaces as taught by Shvartsman '689 based upon the similarity between molding and embossing within

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these references and the teachings Shvartsman '689 that photoresist materials are useful as embossing surfaces and the teachings of Kataoka et al. JP 08-039572 that polyimides are useful as molding surfaces. Further, it would have been obvious to use the process with known coating techniques for coating embossing rollers with photosensitive materials as taught by McGrew '030 and processing techniques for pre-curing, exposing, developing and post-curing polyimides such as those taught by IBM Technical Disclosure Bulletin Vol. 30(3) pp. 1392-1393 (08/1987) with a reasonable expectation of forming a useful image.

The responses above address the arguments of the applicant.

11. Claims 31,2,5,6,8-13,15-19,22 and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shvartsman '689, in view of McGrew '030, IBM Technical Disclosure Bulletin Vol. 30(3) pp. 1392-1393 (08/1987) and Kataoka et al. JP 08-039572, and further in view of JP 01-142077 and/or De Graaf et al. '607.

JP 01-142077 teaches the formation of stampers by electroplating with either nickel or chromium. (abstract)

De Graaf et al. '607 teaches a resist used as a matrix for embossing or molding where the resist is coated with a thin film of Al or Cr. (example II and 5/29-36).

It would have been obvious to modify the processes of Shvartsman '689, in view of McGrew '030, IBM Technical Disclosure Bulletin Vol. 30(3) pp. 1392-1393 (08/1987) and Kataoka et al. JP 08-039572 by using chrome as the electroformed metal rather than nickel based upon the disclosure of equivalence by JP 01-142077 and/or coating the surface of the resist with thin coatings of metals either to provide a conductive surface for the electroforming as taught by JP 01-142077 or to provide a more robust surface for stamping as taught by De Graaf et al. '607.

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The responses above address the arguments of the applicant.

12. Claims 31,4-6,8-13,15-19,22,23 and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shvartsman '689, in view of McGrew '030, IBM Technical Disclosure Bulletin Vol. 30(3) pp. 1392-1393 (08/1987) and Kataoka et al. JP 08-039572, and further in view of JP 01-142077 and/or De Graaf et al. '607 and Abraham '282.

Abraham '282 teaches the formation of dot matrix gratings or regular gratings in photoresists and the use of these as stampers. (3/11-50)

In addition to the basis provided above, the examiner holds that it would have been obvious to use the processes of Shvartsman '689, in view of McGrew '030, IBM Technical Disclosure Bulletin Vol. 30(3) pp. 1392-1393 (08/1987) and Kataoka et al. JP 08-039572, and further in view of JP 01-142077 and/or De Graaf et al. '607, such as dot matrix holograms as the image to be formed in the stampers based upon the teachings of the formation of these holograms in stamper surfaces by Abraham '282.

The responses above address the arguments of the applicant.

13. Claims 2,4-6,10-13,15-17,22 and 28-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Sassmannshausen et al. '768 or Mueller et al. '736, in view of Fan et al. EP 0766142 and McGrew '030.

Sassmannshausen et al. '768 teaches the use of *positive acting polyimide* resists for fabricating relief structures useful in fabricating microelectronics and printing plates. (1/11-30). Processing of the polyimide resists includes coating, pre-baking at 50-120 degrees C, exposure, aqueous alkaline development and post-baking at 200-400 degrees C. (6/23-7/39).

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Mueller et al. '736 teaches the use of positive polyimide resists for fabricating relief structures useful in fabricating microelectronics and printing plates. (4/1-17 and 12/18-32). Processing of the polyimide resists includes coating, pre-baking at 90 degrees C, exposure, aqueous and alkaline development. (example 5).

Fan et al. EP 0766142 describes seamless printing plates, which are useful for printing plates. (5/9-17). The use of printing cylinders allows continuous printing. (2/30-34)

It would have been obvious to one skilled in the art to modify the processes of either Sassmannshausen et al. '768 or Mueller et al. '736 by using the polyimide print surface coated on printing rollers based upon the ability to perform continuous printing and to use the coating processes of McGrew '030 which are disclosed as useful in the printing arts.

The responses above address the arguments of the applicant.

14. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shvartsman '689, in view of Kataoka et al. JP 08-039572 and Sassmannshausen et al. '768, and further in view of Muzino et al. '329 and IBM Technical Disclosure Bulletin Vol. 30(3) pp. 1392-1393 (08/1987).

Mizuno et al. '329 teaches molding gratings of polyimide. (17/34-38).

It would have been obvious to one skilled in the art to use either molding or direct patterning of the polyimide to form patterns in the polyimide for the purposes of embossing in the process of Shvartsman '689 combined with Kataoka et al. JP 08-039572 and Sassmannshausen et al. '768, based upon the disclosure within the art that the photosensitive resins may be either patterned with development as shown in Kataoka et al. JP 08-039572 and IBM Technical Disclosure Bulletin Vol. 30(3) pp. 1392-1393 (08/1987) or photocured in a mold

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as taught by Muzino et al. '329. The showing of the formation of gratings in particular establishes the equivalence of the techniques within the art.

The examiner notes that the "seamless" limitation does not appear in this claim.

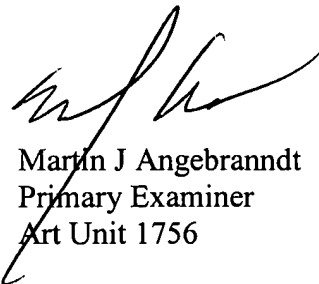
The responses above address the arguments of the applicant.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J Angebranndt whose telephone number is 703-308-4397.

The examiner can normally be reached on Mondays-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 703-308-2464. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



Martin J Angebranndt
Primary Examiner
Art Unit 1756

September 23, 2003